

WHAT IS CLAIMED IS:

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A2 1. A method for treating nitrate-contaminated water comprising treating said water with autotrophic, hydrogen-oxidizing denitrifying bacteria in the presence of hydrogen.

2. The method according to claim 1 wherein the bacteria are purple, non-sulfur phototrophic bacteria.

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Ag 3. The method according to claim 1 wherein the hydrogen is produced by hydrolysis of water.

4. The method according to claim 1 wherein the bacteria have been isolated from nitrate-containing groundwater.

5. An apparatus for treating nitrate-contaminated water comprising:

(a) a pure culture of autotrophic, hydrogen-oxidizing denitrifying bacteria;

(b) a hydrogen generator;

(c) a flow-through bioreactor; and

(d) a filtration unit.

6. The apparatus of claim 5 wherein said hydrogen generator comprises a dual-chamber reservoir wherein each chamber is sealed with a pressure-tight cap penetrated with an electrode, the chambers connected by hollow tubing and containing a solution of sodium hydroxide or potassium hydroxide.

7. The apparatus of claim 5 wherein the flow-through bioreactor is filled with a porous medium for supporting biofilm formation by the bacteria.

8. The apparatus of claim 5 wherein the filtration unit
comprises a sand filtration unit.

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